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RED ARROW

Red Arrow Products Co. LLC
Post Office Box 1537
633 South 20th Street
Manitowoc, WI 54221-1537

PH: 920-683-5500
FAX: 920-683-5524

November 16, 1998

Mr. Tom Katen
Cooper Foods, Inc.
6793 U.S. Rte. 127 North
Van Wert, OH 45891

Dear Tom:

Thank you for your hospitality during my visit last week. We had quite a few projects to tackle and I felt we had very good success. The following pages are test procedures and recommendations for the atomization, collagen turkey breast, apple flavored turkey breast, and **MAILLOSE** and the high temperature oven.

For easy reviewal I have taken one page each to follow up on the aforementioned items. I will be in touch soon to discuss moving forward on these items. In the meantime, please do not hesitate to call with questions.

Sincerely,
Red Arrow Products Co. LLC

Brian C. Hickman
Territory Sales Manager

cc: Eric Ludwig

RED ARROW

ATOMIZATION and SUPREME POLY

The portable atomization unit is in reasonably good shape. Several worn o-rings and gaskets on the pressure tank were replaced, as well as several of the quick disconnects that also were showing noticeable wear. All of the quick disconnect parts should be replaced with new ones, which will help improve the flow of atomized products.

The reason the nozzle clogs up is probably due to mixing **MAILLOSE** and **SUPREME** in the lines. The **SUPREME** is not water soluble and will get very cloudy and could have tar formation when in contact with another water based substance. The simplest recommendation I have would be to utilize **SUPREME POLY** which contains poly-sorbate 80 to make it water soluble. I will be sending a sample to you for tests.

The **SUPREME POLY** will also be required should you decide to do all of your re-smoking in the high temperature oven.

Once the new oven doors are installed in the backs of the large smoke houses the atomization nozzle will need to be re-installed in a more suitable area. With the installation of a new house to west of the existing houses the nozzle will probably have to be installed from the smoke house ceiling with stainless steel tubing dropped down to properly position the nozzle in place. Then, poly-flo lines could be dropped from the ceiling and secured down the front of the house to make the connection with the portable unit simple. Another idea would be to purchase a wall mounted single panel atomization unit which, once installed, would not have to be moved or hooked up for use.

Honey Cured Smoked Turkey - Collagen

We ran a test of this product to get a golden brown color to the product. The following is the test procedure that was run and following it is a recommendation of how to run it in the future to shorten the cycle and use less steps:

TIME	DRY/WET BULB	FA/EX DAMPER	HUMIDITY VALVE	COMMENTS
30 min	125/125	Closed	Auto	
20 min	150/0	Auto	Closed	Dry surface, but only 90F temp
15 min	150/110	Auto	Auto	Tacky, but only 102F temp
10 min	150/0	Auto	Closed	Tacky, about 105F
20 min	0/0	Closed	Closed	Atomization 2.75# of Supreme 3min dwell
40 min	170/112	Auto	Auto	
30 min	180/142	Auto	Auto	
120 min	180/153	Auto	Auto	
180 min	180/160	Auto	Auto	
30 min	180/164	Auto	Auto	To 160F internal
5 min	180/180	Closed	Auto	

The adjustments made during the period when the dry bulb was set at 150F were to ensure proper surface conditions prior to moving on in the processing schedule. The results were quite positive, but the following will be more simple and efficient to run:

TIME	DRY/WET BULB	FA/EX DAMPER	HUMIDITY VALVE	COMMENTS
?	125/125	Closed	Auto	To 102F surface temp
?	150/0	Auto	Auto	To tacky surface
20 min	0/0	Closed	Closed	Atomize 2.75# Supreme 3 minute dwell
40 min	170/112	Auto	Auto	
30 min	180/142	Auto	Auto	
120 min	180/153	Auto	Auto	
to internal	180/164	Auto	Auto	
5 min	180/180	Closed	Auto	

The time on the first two steps will be determined during the first run. However, it is important to assure certain conditiions before moving to the next step in a processing schedule. This is especially true before atomization of a liquid smoke.

Apple Flavored Smoked Turkey

In the high temperature oven we tested several turkey pieces and **LFB SPECIAL A w/apple**. This was an excellent application as the surface temperature did not rise high enough to flash off the apple flavor we were trying to achieve.

The first test piece was dipped in **LFB SPECIAL A w/apple** for one minute and placed in the oven for two runs of four minutes at about 250F. The first run through the top browned very nicely, but the bottom did not. On the second run the product was placed in the oven upside down to brown the bottom portion, which it did. The apple flavor was distinctive.

Another piece was then dipped again for one minute and placed onto the conveyor for 8 minutes at 300F. The color was very brown on the top, but noticeably lighter on the bottom.

The last test was done by dipping one piece for one minute and another for two minutes. Both pieces were placed in the oven at 350F for 8 minutes. Both products browned nicely even on the bottom. These were the products to be sent to the customer for evaluation. The apple aroma was very evident especially on the piece that was drenched for two minutes.

The contact time of the **LFB SPECIAL A w/apple** was sufficient to provide enough penetration into the product surface. Because the high temperature oven only raises the surface temperature to roughly 125F there is no flashing off the apple flavor. Therefore, higher temperatures and less oven time could be tested and should produce superior results.

The product can be labeled "Smoked" and a qualifier could read "Apple Flavor Added" or "Apple Flavored". However, the product can not be labeled "Naturally Smoked" or "Applewood Smoked" or any combination thereof. A possible idea would be to call the product "Apple Flavored Smoked Turkey Breast".

It also must be noted that the product is not Kosher because of the type of apple flavoring we use. If this will be an issue please let me know we can try to source one that is Kosher.

MAILLOSE and IMPINGEMENT

The high temperature oven that is now in place is very impressive. Following a few adjustments the products had very good color. Dipping the products in full strength **MAILLOSE** will be your best option until we can implement an application system. A low volume spray bar applicator with a protective hood is the best recommendation. We can custom design one with or without a conveyor, and to best suit your needs. A system like this would enable you to cover every piece with a consistent amount of **MAILLOSE** to ensure consistent browning throughout the re-smoking process.

When the time is right for you I would recommend getting in touch with Luke Griesbach of our equipment company to discuss specifics. His extension is x125. I have also enclosed a drawing of a spray system that would be most suitable for your needs. The length and width of the system can be varied and the conveyor speed adjusted for adequate product flow prior to heat processing.

PTO-004217

KRETCHMAR HONEY HAM TEST @ UNITHERM

5/26/99

TEST	% PUMP	INFRA RED	OVEN TEMPS ZONE - 1	ZONE - 2
1A	34%	YES	550°	600°
1B	34%	NO	550°	600°
2A	30%	YES	550°	600°
2B	30%	NO	550°	600°
3A	28%	YES	550°	600°
3B	28%	NO	550°	600°
CA	48%	YES	550°	600°
CB	48%	NO	550°	600°

TEST	% PUMP	SMOKE SHOWER	INFRA RED	OVEN TEMPS ZONE - 1	ZONE - 2	
1D	34%	1 MINUTE	1 MINUTE	550°	600°	
1E	34%	1 MINUTE	1 MINUTE	550°	615°	
2E	30%	1 MINUTE	YES	550°	615°	
2E 1			1 MINUTE	550°	615°	SHOWER SIDE UP
2E 2			1 MINUTE	550°	615°	SHOWER SIDE UP
2E 3			1 MINUTE	550°	615°	SHOWER SIDE DOWN
2E 4			1 MINUTE	550°	615°	SHOWER SIDE DOWN
2E 5			1 MINUTE	550°	615°	SHOWER SIDE UP
2E 6			1 MINUTE	550°	615°	SHOWER SIDE UP
2E 7			1 MINUTE	550°	615°	SHOWER SIDE UP
2E 8			1 MINUTE	550°	615°	SHOWER SIDE UP
3E	28%	1 MINUTE	YES	550°	615°	
3E 2			45 SECONDS	550°	615°	SHOWER SIDE UP
3E 3			45 SECONDS	550°	615°	SHOWER SIDE UP
3E 4			45 SECONDS	550°	615°	SHOWER SIDE UP
3E 5			45 SECONDS	550°	615°	SHOWER SIDE UP
3E 6			45 SECONDS	550°	615°	SHOWER SIDE DOWN
3E 7			45 SECONDS	550°	615°	SHOWER SIDE DOWN
3E 8			45 SECONDS	550°	615°	SHOWER SIDE DOWN

NOTES

THE LIQUID SMOKE USED WAS RED ARROW 24P APPLIED @ 50% ON ALL TESTS
THE DWELL TIME IN OVEN WAS 10 MINUTES ON ALL TESTS
INFRARED GRILL TEMPERATURE IS 1200°
ALL RAPID FLOW OVENS HAVE STEAM SUPPLY AND FIRE SUPPRESSION SYSTEM
GRILL & OVEN USE 400psi BELT WASH SYSTEMS

TEST YIELDS FROM RAPID FLOW OVEN

TEST CONDUCTED ON 5/26/99 @ UNITHERM

TEST #	PUMP	LBS IN BAG	LBS OUT OF IR	LBS OUT OF OVEN	YIELD
1	34%	13.6	12.94	12.58	92.50%
1B	34%	13.39	NO IR	12.47	93.13%
2	30%	13.26	12.73	12.45	93.89%
2B	30%	13.53	NO IR	12.88	95.20%
3	28%	14.25	13.64	13.31	93.40%
3B	28%	14.01	NO IR	12.9	92.08%

OVEN TEMP	ZONE 1	550°
	ZONE 2	600°
TIME IN OVEN (minutes)		10
TIME IN IR (minutes)		1
SMOKE SOLUTION	24P	50%

TEST LOT 2 30% PUMP

PEELED WEIGHT	LBS AFTER IR & OVEN	YIELD	LBS AFTER BLAST CHILL	YIELD
12.975	12.555	96.76%	12.51	96.42%
12.98	12.565	96.80%	12.495	96.26%
13.125	12.7	96.76%	12.635	96.27%
12.81	12.395	96.76%	12.355	96.45%
12.85	12.45	96.89%	12.365	96.23%

OVEN TEMP	ZONE 1	550°
	ZONE 2	615°
TIME IN OVEN (minutes)		10
TIME IN IR (minutes)		1
SMOKE SOLUTION	24P	50%

TEST LOT 3 28% PUMP

PEELED WEIGHT	LBS AFTER IR & OVEN	YIELD	LBS AFTER BLAST CHILL	YIELD
12.93	12.465	96.40%	12.445	96.25%
13.37	12.925	96.67%	12.88	96.34%

OVEN TEMP	ZONE 1	550°
	ZONE 2	615°
TIME IN OVEN (minutes)		10
TIME IN IR (minutes)		0.75
SMOKE SOLUTION	24P	50%

PTO-004219

1. TIME & TEMP NECESSARY TO ACHIEVE DESIRED PRODUCT APPEARANCE
2. CLEANING PROCESS
   - 2.1. *CIP TYPE SYSTEM*
   - 2.2. *HOW LONG TO CLEAN SYSTEM*
   - 2.3. *CLEANING DUCTWORK*
   - 2.4. *RECOMMENDED CHEMICALS*
   - 2.5. *DEGREE OF DIFFICULTY IN CLEANING CONVEYOR*
     - 2.5.1.1. ARE BRUSHES USED

1-1½hrs Alkaline

3. WHAT IS NECESSARY TO PROVIDE TEMPERATURE BEYOND THAT OF SUPERHEATED STEAM
4. STEAM USAGE FOR OVEN
5. AMMONIA USAGE FOR CHILLER
6. ELECTRICAL USAGE FOR OVEN & CHILLER
7. SUGGESTED MANNING
8. DOES PRODUCT NEED TO BE PREHEATED OR SURFACE DRIED BEFORE APPLYING LIQUID SMOKE
9. WHAT IMPACT DOES CHILLER HAVE ON INTERNAL TEMPERATURES OF PRODUCT
10. BRINE CHILLING PRIOR TO OVEN # ≈600,000
11. INTERNAL TEMP GOING INTO & OUT OF OVEN
12. FPM OF CHAIN THROUGH OVEN & LENGHTH OF CHAIN 2 FPM
13. WILL BLAST CHILL KEEP UP WITH OVEN
14. BAG SLITTER – CAPACITY & COST
15. FOOT BATHS/BOOTWASHERS – DETAILS & COST
16. STAINLESS STEEL FLOOR DRAINS

Pieces per hour 384

~~Adjustable Air flow - Is oven capable of running other products~~

129°-140°

Brine Chiller L W H 21 x 20 x 10 : 400 pcs/hr

4 pcs across Belt
400' long belt x 40" wide

Send Honey Ham to Wolthers

KRETCHMAR HAM MANNING
CURRENT MANNING

AVG PIECE WEIGHT 10.5

128 PCS 9:23:42 MIN = 563.5 SECONDS
HAMS PER MINUTE 13.6

DEFORM		5/20/99	
PLACE ON RACK	1	PCS/HR	818
LAYUP	2	PCS/MAN/HR	102.2
DEFORM	2	MAN/HRS/100PCS	0.978
WASH FORM	2	LBS/HR	8586
MULE	1	LBS/MAN/HR	1073
	8	MAN/HRS/CWT	0.093

PEEL		5/20/99	
LAYUP	1	PCS/HR	940.4
PEELERS	2	PCS/MAN/HR	166.1
HANG	2	MAN/HRS/100PCS	0.602
SCALE	0.33	LBS/HR	9874
MULE	0.33	LBS/MAN/HR	1745
	5.66	MAN/HRS/CWT	0.057

384 PIECES IN 24.5 MINUTES

15.7 PCS/MIN

PACKAGING - WEST LINE		5/20/99	
LAYUP	1	PCS/HR	903
BAG	1	PCS/MAN/HR	129
CRY-O-VAC	1	MAN/HRS/100PCS	0.775
LABEL	1	LBS/HR	9486
MAKE/PACK BOXES	2	LBS/MAN/HR	1355
PALLETIZE	1	MAN/HRS/CWT	0.074
	7		

PCS	TIME (SEC)
20	63
20	79
20	83.5
20	85
20	88
100	398.5

SEC/PC 3.99
PCS/MIN 15

STUFFING		6/3/99	
STUFFER	1	PCS/HR	629
PAPER MOLD	1	PCS/MAN/HR	105
LID	1	MAN/HRS/100PCS	0.954
CLAMP LID	1	LBS/HR	6602
MULE	1	LBS/MAN/HR	1100
COOKER	1	MAN/HRS/CWT	0.091
	6		

PCS	TIME (SEC)		PCS/MIN	PCS/HR
25	123.81	4.94	12.13	728.10
40	193.15	4.83	12.43	745.53
65	351.93	5.41	11.08	664.90
126	797.12	6.33	9.48	569.05
256	1465.81	5.38		

SEC/PC 5.73
PCS/MIN 10.48

SUM OF MAN/HRS/100 PCS	26.66	3.309
SUM OF MAN/HRS/CWT		0.3152

DEFORM		6/3/99	
PLACE ON RACK	1	PCS/HR	705
LAYUP	1	PCS/MAN/HR	100.8
DEFORM	2	MAN/HRS/100PCS	0.992
WASH FORM	2	LBS/HR	7406
MULE	1	LBS/MAN/HR	1058
	7	MAN/HRS/CWT	0.095

PCS	TIME (SEC)		PCS/MIN	PCS/HR
42	219.7	5.23	11.47	688.09
84	444.0	5.29	11.35	681.08
126	656.8	5.21	11.51	690.64
168	874.2	5.20	11.53	691.82
42	193.5	4.61	13.02	781.44
84	417.3	4.97	12.06	724.81
126	608.4	4.83	12.43	745.58
168	873.5	5.20	11.54	692.37
840	4287.47	5.07		

SEC/PC 5.10
PCS/MIN 11.76

TEST YIELDS FROM RAPID FLOW OVEN

TEST CONDUCTED ON 5/26/99 @ UNITHERM

TEST #	PUMP	LBS IN BAG	LBS OUT OF IR	% LOSS	LBS OUT OF OVEN	% LOSS	TOTAL % LOSS	PFF
1	34%	13.6	12.94	4.85%	12.58	2.78%	7.50%	
1B	34%	13.39	NO IR		12.47		6.87%	16.8
2	30%	13.26	12.73	4.00%	12.45	2.20%	6.11%	
2B	30%	13.53	NO IR		12.88		4.80%	17.9
3	28%	14.25	13.64	4.28%	13.31	2.42%	6.60%	
3B	28%	14.01	NO IR		12.9		7.92%	17.1

OVEN TEMP	ZONE 1	550°
	ZONE 2	600°
TIME IN OVEN (minutes)		10
TIME IN IR (minutes)		1
SMOKE SOLUTION	24P	50%
MINUTES FROM PEEL TO OUT OF OVEN		18.5

TEST LOT 2 30% PUMP

	LBS OUT OF BAG	LBS AFTER IR & OVEN	% LOSS	LBS AFTER BLAST CHILL	% LOSS	TOTAL % LOSS
	12.975	12.555	3.24%	12.51	0.36%	3.58%
	12.98	12.565	3.20%	12.495	0.56%	3.74%
	13.125	12.7	3.24%	12.635	0.51%	3.73%
	12.81	12.395	3.24%	12.355	0.32%	3.55%
	12.85	12.45	3.11%	12.365	0.68%	3.77%
TOTAL	64.74	62.665	3.21%	62.36	0.49%	3.68%

PFF 17.9

OVEN TEMP	ZONE 1	550°
	ZONE 2	615°
TIME IN OVEN (minutes)		10
TIME IN IR (minutes)		1
SMOKE SOLUTION	24P	50%
MINUTES FROM PEEL TO OUT OF OVEN		18.5

TEST LOT 3 28% PUMP

	LBS OUT OF BAG	LBS AFTER IR & OVEN	% LOSS	LBS AFTER BLAST CHILL	% LOSS	TOTAL % LOSS
	12.93	12.465	3.60%	12.445	0.16%	3.75%
	13.37	12.925	3.33%	12.88	0.35%	3.66%
TOTAL	26.3	25.39	3.46%	25.325	0.26%	3.71%

PFF 17.1

OVEN TEMP	ZONE 1	550°
	ZONE 2	615°
TIME IN OVEN (minutes)		10
TIME IN IR (minutes)		0.75
SMOKE SOLUTION	24P	50%
MINUTES FROM PEEL TO OUT OF OVEN		18.25

IR REFERS TO INFRARED OVEN

PTO-004222

YIELD SAVINGS

			CURRENT METHOD 48% PICKLE	PROPOSED METHOD 32% PICKLE
$55.00	20/26 MARKET	CUSHION	1000	1000
$4.00	GEOGRAPHIC	PICKLE	480	320
$59.00		BINDER	150	150
$11.00	CREDITS	DEXTROSE	30	30
$48.00		HONEY	75	75
47.0%	BONING YIELD			
$102.13		PUMP %	38.65%	31.97%
$30.00	CUSHION MARK-UP			
$132.13				
		MEAT COST	**$120.71**	**$120.71**
$112.31	85% CUSHION @ $132.13			
$8.40	15% BINDER @ $56.00	PUMPED COST	$87.06	$91.47
$120.71	**MEAT COST**	SHRINK YIELD	78.5%	88.5%
		YMC	**$110.91**	**$103.35**
		SAVINGS/CWT		$7.55
		ANNUAL SALES		5,600,000
		ANNUAL SAVINGS		$42,057

KRETCHMAR HAM MANNING

CURRENT MANNING

5/20/99
5/20/00

DEFORM			
PLACE ON RACK.	1	PCS/HR	818
LAYUP	2	PCS/MAN/HR	102.2
DEFORM	2	MAN/HRS/100PCS	0.978
WASH FORM	2		
MULE	1		
	8		

128 PCS 9:23:42 MIN = 563.5 SECONDS
HAMS PER MINUTE 13.6

PEEL			
LAYUP	1	PCS/HR	940.4
PEELERS	2	PCS/MAN/HR	166.1
HANG	2	MAN/HRS/100PCS	0.602
SCALE	0.33		
MULE	0.33		
	5.66		

384 PIECES IN 24.5 MINUTES

15.7 PCS/MIN

PACKAGING - WEST LINE			
LAYUP	1	PCS/HR	903
BAG	1	PCS/MAN/HR	129
CRY-O-VAC	1	MAN/HRS/100PCS	0.775
LABEL	1		
MAKE/PACK BOXES	2		
PALLETIZE	1		
	7		

PCS	TIME (SEC)
20	63
20	79
20	83.5
20	85
20	88
100	398.5

SEC/PC 3.99
PCS/MIN 15

SUM OF MAN/HRS/100 PCS	20.66	2.355

21

PRE-COOKED IN THE BAG KRETCHMAR WA HONEY

PRE-COOKED WEIGHT	POST-COOKED WEIGHT	
13.88	14.36	
13.69	13.52	
14.59	13.82	
14.01	13.94	
13.89	14	
14.53	13.8	
13.93	13.34	
14.34	13.59	
14.52	13.79	
13.65	13.71	
14.28	13.65	
14.48	13.35	
14.11	13.76	
14.16	14.08	
14.06	14.48	
13.78	14	
13.63	14.31	
13.99	12.94	
13.91	14.19	
14.2	14.55	
14.09	13.85	
14.03	14.03	
14.06	14.51	
13.83	13.95	
14.09	13.92	
13.95	14.61	
13.97	14.54	
13.76	13.71	
13.82	13.94	
13.75	14.06	
14.47	14.13	
13.92	14.13	
13.71	14.01	
13.92	13.91	
13.85	14.34	
13.99	13.8	
14.35	13.85	
519.19	516.47	99.48%

Avg Piece weight 14.03 13.96

KRETCHMAR HONEY HAM YIELD STUDY - TEST A

5/11/99

GREEN WEIGHT ESTIMATED
10615

VAT WEIGHTS TO STUFF - 5/11/99

TICKET #	LBS	ACTUAL LBS*	PIECES
46563	2473	2339	
46564	1760	2292	
46565	2612	1604	
46566	2484	2200	
46567	2382	2273	
46568	2615	2129	
46570	2382	1106	
46571	1607	2354	
PARTIAL		1926	
TOTAL	18315	18223	1248

AVERAGE PIECE WEIGHT	14.6

*ACTUAL LBS ARE FROM VANILLA TICKET WHICH IS AFTER MASSAGE

PACKAGING WEIGHTS

PIECES	LBS
	6813.4
	316
	6816.4
1PC reheat	11.2
1PC	11.4
1248	13568.4

TREE WEIGHTS TO SMOKE - 5/12/99

TREE #	PIECES	PUMP/ STUFF LBS
1	80	1077
2	80	1073
3	80	1094
4	80	1093
5	80	1110
6	80	1096
7	80	1082
8	80	1096
9	80	1078
10	80	1082
11	80	1111
12	80	1117
13	80	1120
14	80	1109
15	80	1082
16	48	661
TOTAL	1248	17081

AVERAGE PIECE WEIGHT	13.7
YIELD TO SMOKE	93.73%

SMOKED WEIGHT TO PACK - 5/13/99

TREE #	PIECES	WEIGHT
1	80	883
2	80	874
3	80	884
4	80	893
5	80	909
6	80	889
7	80	882
8	80	898
9	80	883
10	80	880
11	80	900
12	80	907
13	80	914
14	80	902
15	80	873
16	48	535
TOTAL	1248	13906

AVERAGE PIECE WEIGHT	11.1
YIELD FROM STUFF	76.31%

TOTAL PACKAGED WEIGHT	13568.4
AVERAGE PIECE WEIGHT	10.87
YIELD FROM STUFF TO PACK	74.46%

PTO-004226

KRETCHMAR HONEY HAM YIELD STUDY - TEST B

5/17/99

VAT WEIGHTS TO STUFF - 5/13/99				
GREEN WEIGHT	TICKET #	LBS	ACTUAL LBS*	PIECES
1536	32204	2685	2242	
936	32205	1624	1943	
1523	32206	2643	2271	
1417	32207	2460	2116	
1449	32208	2514	2272	
1374	32209	2385	885	
1410	32210	2446	1294	
			1272	
			2264	#
9645	TOTAL	16737	16559	1180

AVERAGE PIECE WEIGHT	14.0

*ACTUAL LBS ARE FROM VANILLA TICKET WHICH IS AFTER MASSAGE

TREE WEIGHTS TO SMOKE - 5/14/99		
TREE #	PIECES	PUMP/ STUFF LBS
1	80	1058
2	80	1065
3	80	1063
4	80	1066
5	70	924
6	70	923
7	70	938
8	70	936
9	70	939
10	70	951
11	80	1101
12	80	1079
13	80	1072
14	80	1055
15	80	921
16	40	524
TOTAL	1180	15615

AVERAGE PIECE WEIGHT	13.2
YIELD TO SMOKE	94.30%

SMOKED WEIGHT TO PACK - 5/17/99		
TREE #	PIECES	WEIGHT
1	80	836
2	80	835
3	80	831
4	80	837
5	70	724
6	70	725
7	70	737
8	70	736
9	70	753
10	70	753
11	80	869
12	80	840
13	80	863
14	80	841
15	80	730
16	40	413 ← Estimated weight
TOTAL	1180	12323

AVERAGE PIECE WEIGHT	10.4
YIELD FROM STUFF	74.42%

PACKAGING WEIGHTS		
	PIECES	LBS
	1168	11953.1
?	12	122.8 estimated weight
TOTAL	1180	12075.9

TOTAL PACKAGED WEIGHT	12075.9
AVERAGE PC WEIGHT	10.2
YIELD FROM STUFF TO PACK	72.93%

PTO-004227

MANNING FOR VIRGINIA STYLE HAMS

LABOR SAVINGS

	DEFORM		PEELING		PACKAGING		TOTAL
CURRENT	LAYUP	2	LAYUP	1	LAYUP	1.67	
	DEFORM	2	PEEL	2	BAG	1	
	RACK	1	HANG	2	CRY-O-VAC	1	
	WASH	2	SCALE	0.33	LABEL	1	
	MULE	2	MULE	0.33	MAKE/PACK BOX	2	
					PALLETIZE	1	
		9		5.66		7.67	22.33
PCS/HR		818		940		903	
PCS/MAN/HR		91		166		118	
HRS/100 PCS		1.100		0.602		0.849	2.552
PROPOSED					DEFORM	1	
					PEEL	1	
					BAG & COV	1	
					LABEL & BOX	1	
					MAKE BOX & PALLETIZE	1	
					MULE	1	
						6	6
PCS/HR							384
PCS/MAN/HR							64
HRS/100 PCS							1.563

	PRESENT	PROPOSED	
ANNUAL VOLUME (LBS)	5,600,000	5,600,000	
PIECE WEIGHT	10.5	11.55	
HRS/100/PCS	2.552	1.563	
LABOR RATE	$15.69	$15.69	
TOTAL LABOR COST	$213,532	$118,864	[redacted]

20/26 mkt 55.00
+4.00 geog
59.00
-11.00 credits
48.00 ÷ 47% = 102.13
.30 cushion
132.13

91.45
÷ 94%
97.28

132.13 x 85% = 112.31
56.00 x 15% 8.40
120.71
÷ 139% pump -
= 86.84
÷ 78.50% shrink-yld
110.62 YMC

86.84
÷ 84.50% shrink-yld
102.77 YMC

6% shrink = (7.85)

$440,865

T% 10.226936

$74,357

48% pickle
15% Cinder
3% dextrose
7.5% Honey

48%
1000
490
150
30
75
1735

1030
1055

32%
1000
320
150
30
75
1575

470

PTO-004229

3/14/00

8290

Smoke breacher belt set at slowest setting

Unitherm set at 21.53Hz EXIT ENTRANCE

EXIT	ENTRANCE	
533	648	ACTUAL
650	650	SET POINT

Exhaust fans off (slowest speed)

Infra Red Cabinet

Speed 33 Fast Drive Full Power

Steam Cabinet

Speed-4 Steam - Last valve off

12th nozzel set so steam not coming out into room

The other 3 valves were opened approx 2½-4.

The thermometers were running at 184, 184, 186

timed pieces at 5.5/min.

3122 cc: Stuart
Alan
Jeff
Brian

Do NOT deviate from 40°F Rule - Product is to be below 40°F prior to unthawing.

Chris

TempRecord for Windows v3.16

Summary

Data Source	:	logger			
Logger Type	:	multi-trip			
Serial Number	:	M0028405			
Logger Status	:	logging			
Sample Period	:	00:10:00 (6.0 / hour)			
Date Printed	:	Tuesday, March 14, 2000 9:45:33 PM			
Samples in Logger	:	73			
Started	:	Tuesday, March 14, 2000 9:38:36 AM			
First Sample	:	Tuesday, March 14, 2000 9:38:36 AM			
Last Sample	:	Tuesday, March 14, 2000 9:38:36 PM			
Start with Button	:	OFF	Allow Markers	:	OFF
Stop with Button	:	OFF	Loop Overwrite	:	OFF
Start with Switcher	:	ON	Safe Range Entry	:	OFF
Stop with Switcher	:	ON	Limit Delay	:	1
Upper Limit	:	165.00 F (not exceeded)			
Lower Limit	:	19.99 F (not exceeded)			
Total Samples	:	2,380	Logger Version	:	2.01
Total Uses	:	31	Memory	:	8k
Sensor	:	standard			

Item Number:	:	8290
Stuff Lot:	:	R&D Test post unitherm
Cook Lot:	:	with steam tunnel
Date:	:	
Rack Number:	:	
Temp Recorder:	:	Probe 19
Takedown Number:	:	
Oven Number:	:	
	:	
	:	

Values in Window
(Samples 1 to 73, units = F)

Tuesday, March 14, 2000

09:38:36	32.99	32.79	32.76	32.76	32.76	32.76
10:38:36	32.76	32.76	32.79	32.79	32.81	32.83
11:38:36	32.85	32.85	33.04	32.95	32.95	38.03
12:38:36	40.41	45.19	50.58	55.38	59.47	62.46
13:38:36	64.72	66.07	66.70	66.90	66.67	66.16
14:38:36	65.37	64.49	63.52	62.47	61.48	60.46
15:38:36	59.34	58.32	57.34	56.41	55.53	54.72
16:38:36	53.91	53.19	52.48	51.75	51.04	50.47
17:38:36	49.84	49.23	48.63	48.07	47.50	46.94
18:38:36	46.42	45.90	45.43	44.98	44.51	44.08
19:38:36	43.68	43.27	42.87	42.53	42.17	41.85
20:38:36	41.52	41.25	40.96	40.69	40.46	40.23
21:38:36	39.83					

Chilled in Cooler (35F)
Ambient temperature

TempRecord for Windows v3.16

Summary

Data Source	: logger				
Logger Type	: multi-trip				
Serial Number	: M0028413				
Logger Status	: logging				
Sample Period	: 00:10:00 (6.0 / hour)				
Date Printed	: Tuesday, March 14, 2000 9:47:01 PM				
Samples in Logger	: 73				
Started	: Tuesday, March 14, 2000 9:38:26 AM				
First Sample	: Tuesday, March 14, 2000 9:38:26 AM				
Last Sample	: Tuesday, March 14, 2000 9:38:26 PM				
Start with Button	: OFF	Allow Markers	:	OFF	
Stop with Button	: OFF	Loop Overwrite	:	OFF	
Start with Switcher	: ON	Safe Range Entry	:	OFF	
Stop with Switcher	: ON	Limit Delay	:	1	
Upper Limit	: 129.99 F (not exceeded)				
Lower Limit	: 45.00 F (exceeded)				
Total Samples	: 4,949	Logger Version	:	2.01	
Total Uses	: 64	Memory	:	8k	
Sensor	: standard				

Item Number:	: 8290
Stuff Lot:	: R & D Pst unitherm
Cook Lot:	: with steam tunnel
Date:	:
Rack Number:	:
Temp Recorder:	: Probe 52
Takedown Number:	: -
Oven Number:	:
	:
	:

Values in Window
(Samples 1 to 73, units = F)

Tuesday, March 14, 2000

09:38:26	32.86	32.74	32.70	32.70	32.72	32.76
10:38:26	32.79	32.81	36.72	39.97	44.40	48.72
11:38:26	52.32	55.04	57.00	58.14	58.64	58.73
12:38:26	58.44	58.05	57.40	56.77	56.07	55.27
13:38:26	54.48	53.73	52.95	52.23	51.51	50.86
14:38:26	50.22	49.55	48.96	48.42	47.84	47.34
15:38:26	46.85	46.36	45.90	45.50	45.16	44.78
16:38:26	44.44	44.10	43.77	43.48	43.16	42.87
17:38:26	42.60	42.31	42.04	41.77	41.47	41.18
18:38:26	40.89	40.62	40.37	40.12	39.87	39.63
19:38:26	39.40	39.18	39.00	38.82	38.64	38.50
20:38:26	38.30	38.16	38.03	37.87	37.76	37.65
21:38:26	37.40					

Chilled in Cooler (35°F) ambient temperature